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# THE LOCALIZING VALUE OF APHASIA.[1]

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THAT condition of speech defect, known generally as aphasia, has of late years been the subject of such careful and exhaustive study, both from the psychological and physiological points of view, has been so divided and subdivided, has been so burdened with nomenclature and unimportant variations, that it hardly commands its proper place in the domain of cerebral localization. The centres for the various language processes have shared the fate of the other centres, in that we can no longer regard them as exact geometric figures, but must look upon them as more or less irregularly shaped areas, overlapping and shading into one another.

For practical purposes, unquestionably the best division of the subject is into motor and sensory aphasia, regarding the posterior part of the third frontal convolution and the insula; together, perhaps, with the lower anterior part of the ascending frontal, as the centre for the former variety, and the region about the angular and supra-marginal gyri, and the temporal convolutions, as the centres for the latter. This, of course, on the left side for right-handed individuals. It is doubtful whether we can separate the two varieties of motor aphasia by their lesions, and so for practical purposes it is best, in the present state of our knowledge, to consider both conditions as due to a lesion of the third frontal, possibly involving a part of the second frontal, and in addition the insula. Our knowledge of sensory aphasia is in some respects more, in some respects less, exact than of the motor variety. The two varieties can be separated by the lesion producing them. Thus, word blindness is almost certainly due to a lesion involving the cuneus and the supramarginal and angular gyri, while word deafness depends upon injury to the cortex in the temporal region, probably the first temporal convolution.

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The somewhat rare cases of pure sensory aphasia, word blindness or word deafness, will often afford symptoms sufficiently certain to warrant surgical interference, as can be seen by referring to Starr's valuable collection of cases. On the other hand, we sometimes fail to find aphasic symptoms when the recognized centres are apparently involved. I have recently had under my care two cases of right hemianopsia from central disease, neither of which showed any trace of word blindness. One of these cases passed from my observation; the other went to autopsy, and the specimen here presented shows involvement of the whole of the cuneus and precuneus, of the left occipital lobe with more or less destruction of the angular and supramarginal gyri, particularly the former. The tumor in the fresh state seemed to have replaced all the posterior half of the occipital lobe. It would seem to be a safe rule to make a large opening in the skull when looking for lesions involving either the visual or auditory centres. Some limited experiments with a case of word blindness has led me to think that perhaps we do not lay enough stress upon the individuality of the patient. A person with word blindness will sometimes be able to pick out the printed names of objects, when he is entirely unable to grasp the meaning of the simplest proposition. The printed or written name of an object becomes associated indissolubly with the appearance of the object, and does not have to be referred to the speech processes to be recognized, just as children are taught words by the object system. So, in like manner, a person who, like Macaulay, was accustomed to read by paragraphs, would probably be able to recognize certain simple propositions. I test such cases by writing the names of a number of objects, and then show the patient one of these objects and ask him to pick out the written name.

Our knowledge of the seat of pure motor aphasia is, as has been noted, more exact than in the case of sensory aphasia. Moreover, it sometimes happens that we have paralysis of certain groups of muscles as a guide, since the language area is so nearly contiguous to the motor area. When, however, the lesion involves the association fibres, with a consequent mixed variety of aphasia, the diagnosis becomes more uncertain. The following case, the brain from which I present, illustrates the difficulty which is sometimes met with in arriving at a satisfactory diagnosis. Pratt, aged about fifty-five; sailor; when admitted into hospital was totally unable to give any account of himself. There was absolute loss of language; he made sounds which bore very little resemblance to articulate speech, nor were there any recurrent words. Upon attempting to write his name he made one or two letters, but not enough to permit of the name being deciphered. Further than this any attempt at writing resulted merely in illegible scrawls; he was also unable to copy. He could not understand a single written or printed word as many and varied tests proved. He was not able to read aloud or repeat from dictation. He understood perfectly everything that was said to him, and his intelligence seemed nearly if not quite normal. There was no paralysis, and the eye ground showed nothing abnormal. General health was excellent and there was no evidence of syphilis. His wife was seen, and reported that he had formerly been able to read and write with ease. In what manner the attack came on, whether suddenly or gradually, or whether there was any injury, was never known as he came from his ship to the hospital, and the vessel sailed before any information could be obtained. During the three or four years that he was under my observation, little change occurred in his condition ; he learned to utter a few words, but never complete sentences, nor did he acquire a power of writing ; and though he sometimes held a newspaper before his face, he never understood, as far as I could tell, a single word. A month or two before his death he had several fits, and was supposed to have died during a convulsive seizure. The autopsy showed the meninges greatly congested, with minute points of extravasation, which were quite recent and probably took place during the last fit. The lesion in the brain was confined to the insula, which was almost entirely destroyed, the posterior part of the third frontal convolution, and a slight erosion of the anterior inferior portion of the ascending frontal convolution. It looked as if there had been a cyst, the result of softening, and this view was in part confirmed by finding an old infarct in the spleen. While the brain was fresh, an incision was carried immediately beneath the cortex of the left hemisphere, and no evidence of involvement of the sub-cortical white matter could be seen. The interesting point in this case was the absolute word blindness due almost certainly to a break in the association fibres very close to the cortex. I had rather expected to find multiple lesions; or, at least, to have found either an involvement of the occipital cortex or the deeper portions of the white matter. When there is hemiplegia accompanying the aphasia, of course we know that the lesion is in the region of the capsule, and hence do not advise operation. I have just now under my care a case which is clinically the counterpart of the one related, with the addition of a right hemiplegia. In this latter case the word blindness was for more than a year absolute, but with the improvement of the paralysis the patient became able at first to recognize the names of objects and finally to understand simple propositions.

There is one other point in regard to the localizing value of speech disturbances that I have had an opportunity recently to verify, and that is the general disturbance of speech due to wide-spread injury or disease to the left fronto-parietal region. A man was brought into the hospital suffering from the effects of alcohol, and in addition he had some slight bruises about the face and head. There was no apparent injury to the skull; nothing, I believe, but a very slight abrasion of the scalp. The patient lay in an unconscious condition for about a week, during which time he became violent, attempting to get out of the hospital. At the end of a week he had recovered from the apparent injuries, but his mental condition was extremely bad. He was inclined to be violent, and had to be forcibly restrained. During the first week he had some temperature, but this subsided. A careful examination of the case showed that while the man's mental condition was very bad, still he could recognize the use of objects, though entirely unable to pronounce their name.

He could articulate, but used words entirely at random. While the case could not be satisfactorily examined owing to the mental condition, still I determined to have the man operated on, having as the only localizing symptom the very general disturbance of the speech centre. The skull was opened by Prof. Chambers in the region of the third frontal convolution on the left side, and the dura incised. There was at once an escape of an ounce or more of serum, and upon turning the dural membrane back it was found to be covered with a thin layer of blood with here and there minute clots. The man has improved very much, but the operation was done only a few days ago and will be reported later with more detail. I simply refer to the case as an evidence of the value of speech disturbance, even when there is no distinct or recognizable variety of aphasia present.